

### **Remarks**

This Response is timely filed within three months of the mailing date of the latest Office Action. Accordingly, no fee is required. 37 CFR § 1.134-1.136.

Claims 1-24 are pending in this application. By this amendment, Claims 1, 3, 4, 15, 16, 19, and 20 are amended. Claim 2 is canceled and Claims 21-24 are added. No new matter has been added. Reconsideration of the application in view of the above amendments and the following remarks is respectfully requested.

#### **I. The Claims are Patentable Over GB Patent Appl. No. 2003741**

Claims 1-20 were rejected under 35 U.S.C. 102(b) as being unpatentable over GB Patent Appl. No. 2003741 to Renton (hereinafter "Renton"). Applicant respectfully traverses this rejection.

As amended, Claim 1 recites a continuous vacuum pan comprising: a cylindrical housing having a vertical axis; at least one liquid heating pan within the housing, the liquid heating pan having a periphery and a bottom; a vertical tube floating calandria within the liquid heating pan, the vertical tube floating calandria having a periphery, and a bottom; a downcomer disposed between the periphery of the calandria and the periphery of the liquid heating pan, with a gap between the bottom of the calandria and the bottom of the liquid heating pan; radially extending baffles in the liquid heating pan defining a plurality of compartments located in series with one another, the compartments ranging from a first upstream compartment to a downstream output compartment; and ports in all of the baffles, except in the baffle between the output compartment and the first compartment, the ports being located above the top of the calandria and permitting communication of liquid between the compartments. Claims 3-14, and newly added Claims 21-23 depend from Claim 1 and include at least all of the limitations recited therein.

As amended, Claim 15 recites a method of crystallizing the solute of a solution by evaporating the solvent of the solution in a continuous operation in a vacuum pan having a plurality of compartments with a periphery and a bottom and being located in series with one

another and being divided from one another by radially extending baffles, the compartments ranging from a first upstream compartment to a downstream output compartment, the method including the steps of: heating the solution within each compartment via a vertical tube floating calandria having a periphery, a top, and a bottom, so that the solution will flow upwardly through vertical tubes of the calandria, across the top of the calandria, downwardly through a downcomer between the periphery of the calandria and the periphery of the compartment, along a gap between the bottom of the calandria and the bottom of the compartment, and back into the vertical tubes of the calandria; and discharging excess solution from upstream compartments to downstream compartments through ports in the baffles onto the calandria towards the periphery of the calandria or directly into the downcomer, the ports being located above the calandria, and with the gap between the bottom of the compartments decreasing towards the centre of the calandria to ensure adequate circulation of the solution.

As amended, Claim 16 recites a continuous vacuum pan comprising: a generally cylindrical housing; at least one liquid heating pan disposed within the housing, the liquid heating pan having a periphery, a bottom, and at least one baffle that defines a plurality of adjacent compartments; a vertical tube floating calandria disposed within the liquid heating pan and having a periphery and a bottom; and a downcomer disposed between the periphery of the calandria and the periphery of the liquid heating pan, wherein the bottom of the calandria is spaced from the bottom of the liquid heating pan, and each compartment communicates with at least one other compartment at a location above the top of the calandria. Claims 17-19 depend from Claim 16 and include at least all of the limitations recited therein.

As amended, Claim 20 recites a method of crystallizing a solute of a solution in a vacuum pan, the method comprising: disposing the solution in a plurality of adjacent compartments that each communicate with at least one other compartment; heating the solution; circulating the solution via a vertical tube floating calandria comprising a periphery, a top, a bottom, and at least one vertical tube, so that the solution flows through the at least one vertical tube, across the top of the calandria, downwardly between the periphery of the

calandria and periphery of a compartment, along a gap between the bottom of the calandria and the bottom of the compartment, and back into the vertical tubes of the calandria; and discharging excess solution from upstream compartments to downstream compartments from a location above the top of the calandria.

Renton does not teach or suggest the subject matter of the present invention. Renton discloses a crystallizer vessel having a fixed calandria 12 “of conventional construction.” See Renton, pg. 1, ll. 100-103. The calandria disclosed in Renton comprises two annular tube plates 14 and 16 located one above the other *and welded at their outer peripheries to the outer wall of the vessel*. Id. (emphasis added). Renton does not teach or disclose a vertical tube floating calandria, or corresponding method using a vertical tube floating calandria, as presently claimed. Moreover, contrary to the suggestion in the present Office Action, Renton does not disclose a downcomer disposed between the periphery of the calandria and the periphery of the liquid heating pan, as presently claimed. The specification including Figs. 1 and 2 is silent with respect to providing a downcomer.

For at least these reasons, Applicant submits that Renton does not teach each and every element of the presently claimed invention. Accordingly, Applicant respectfully requests that the Examiner reconsider and withdraw the rejections, and allow the append claims at an early date.

## **II. Newly Added Claim 24 is Patentable Over the Cited References**

By this amendment, independent Claim 24 is added. Claim 24 recites a continuous vacuum pan comprising: a generally cylindrical housing; at least one liquid heating pan disposed within the housing, the liquid heating pan having a periphery, a bottom, and at least one baffle that defines a plurality of adjacent compartments; a vertical tube floating calandria disposed within the liquid heating pan and having a periphery and a bottom; a downcomer disposed between the periphery of the calandria and the periphery of the liquid heating pan, wherein the bottom of the calandria is spaced from the bottom of the liquid heating pan, and each compartment communicates with at least one other compartment; a centrally located heating fluid conduit for supplying heating fluid to the calandria, and wherein the bottom of the liquid heating pan is substantially W-shaped.

For at least the reasons stated above, Renton does not teach or suggest the subject matter recited in Claim 24.

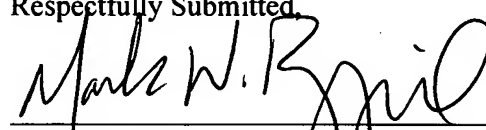
**III. Conclusion**

In view of the foregoing amendments and remarks, Applicant respectfully submits that the claims of the present invention, including newly added Claims 21-24, define subject matter patentable over the references cited by the Office and that the application is in condition for allowance. Should the Office believe that anything further is desirable to place the application in better condition for allowance, the Office is invited to contact Applicant's undersigned attorney at the below listed telephone number.

No fee is believed to be due for this submission. Should any fee be required, however, the Commissioner is hereby authorized to charge the required fee to Collier Shannon Scott Deposit Account No. 03-2469. Moreover, if the deposit account contains insufficient funds, the Commissioner is hereby invited to contact Applicant's undersigned representative to arrange payment.

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Respectfully Submitted,



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